

CLAIMS

What is claimed is:

1. A voltage detector comprising:
  - a voltage following circuit connected to a power supply  $V_{DD}$  and operable to follow a voltage value of the power supply;
  - a selectable threshold point circuit connected to the voltage following circuit and operable to select one of a plurality of values for a threshold point of the power supply; and
  - a switch circuit coupled to the selectable threshold point circuit and the voltage following circuit, the switch circuit cooperating with the selectable threshold point circuit to generate an output indicating whether the value of the power supply has increased above or decreased below the selected value for the threshold point in response to the followed value of the power supply.
2. The voltage detector of Claim 1 wherein the selectable threshold point circuit is operable to receive a plurality of control signals.
3. The voltage detector of Claim 1 wherein the selectable threshold point circuit is operable to output a programmable amount of current.
4. The voltage detector of Claim 1 wherein the selectable threshold point circuit comprises a plurality of current mirror transistors.
5. The voltage detector of Claim 4 wherein at least one of the current mirror transistors is coupled to a respective switch transistor.

6. The voltage detector of Claim 5 wherein the switch transistor is operable to receive a control signal.<sup>2.06 - 2.14</sup>

5 7. The voltage detector of Claim 1 wherein the selectable threshold point circuit comprises a plurality of current mirror transistors, at least two of the current mirror transistors<sup>2.22 - 2.41</sup> having a different width-to-length ratio.

8. The voltage detector of Claim 1 wherein the switch circuit comprises a<sup>1.12</sup> transistor.

9. The voltage detector of Claim 8 wherein a gate of the transistor receives the followed value of the power supply.

10 10. The voltage detector of Claim 1 wherein the switch circuit and the selectable threshold point circuit are connected at a detection node, the switch circuit operable to pull a<sup>cc</sup> voltage at the detection node to ground when the value of the power supply is above the selected value for the threshold point.

20 11. The voltage detector of Claim 1 wherein the switch circuit and the selectable threshold point circuit are connected at a detection node, the selectable threshold point circuit<sup>cc</sup> operable to pull a voltage at the detection node up to the value of the power supply when the power supply is below the selected value for the threshold point.

12. The voltage detector of Claim 1 further comprising a current source generator block coupled to the voltage-following circuit and the switch circuit.

13. The voltage detector of Claim 12 wherein the current source generator block comprises:

a reference transistor; and

a current mirror transistor coupled to the reference transistor and the switch circuit.

14. The voltage detector of Claim 12 wherein the current source generator block comprises:

a reference transistor; and

a plurality of current mirror transistors coupled to the reference transistor and the switch circuit.

15. The voltage detector of Claim 1 further comprising a voltage level detection circuit coupled to the selectable threshold point circuit and the switch circuit, the voltage level detection circuit operable to output a signal indicating whether the value of the power supply is above or below the selected value for the threshold point.

16. A method for detecting a voltage level performed in a circuit, the method comprising:

selecting one of a plurality of values for a threshold point for a power supply;  
tracking a voltage value of the power supply; and

generating an output that indicates whether the voltage value of the power supply has increased above or decreased below the selected value for the threshold point in response to the tracked value of the power supply.

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17. The method of Claim 16 wherein selecting comprises transmitting at least one control signal to the circuit.

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18. The method of Claim 16 wherein selecting comprises turning on at least one switch transistor.

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19. The method of Claim 16 wherein generating comprises pulling a voltage level at a detecting node to ground when the value of the power supply exceeds the selected threshold point.

20. The method of Claim 16 wherein generating comprises pulling a voltage level at a detecting node to the value of the power supply when the value of the power supply is below the selected threshold point.

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21. A system comprising:

a memory;

a microprocessor; and

a voltage detector coupled to the memory and the microprocessor, the voltage detector comprising:

a voltage following circuit<sup>107</sup> connected to a power supply<sup>V<sub>DD</sub></sup> and operable to follow a voltage value of the power supply;

a selectable threshold point circuit<sup>108</sup> connected to the voltage following circuit and operable to select one of a plurality of values for a threshold point of the power supply; and

a switch circuit<sup>109</sup> coupled to the selectable threshold point circuit and the voltage following circuit, the switch circuit cooperating with the selectable threshold point circuit to generate an output indicating whether the value of the power supply has increased above or decreased below the selected value for the threshold point in response to the followed value of the power supply.

22. The system of Claim 21 wherein the selectable threshold point circuit is operable to receive a plurality of control signals.<sup>208-214</sup>

23. The system of Claim 21 wherein the selectable threshold point circuit is operable to output a programmable amount of current.<sup>CC</sup>

24. The system of Claim 21 wherein the selectable threshold point circuit comprises a plurality of current mirror transistors.<sup>228-240</sup>

25. The system of Claim 24 wherein at least one of the current mirror transistors is coupled to a respective switch transistor.<sup>242-248</sup>

26. The system of Claim 25 wherein the switch transistor is operable to receive a control signal.

27. The system of Claim 21 wherein the selectable threshold point circuit comprises a plurality of current mirror transistors, at least two of the current mirror transistors having a different width-to-length ratio.

28. The system of Claim 21 wherein the switch circuit comprises a transistor.<sup>112</sup>

29. The system of Claim 28 wherein a gate of the transistor receives the followed value of the power supply.<sup>88</sup>

30. The system of Claim 21 wherein the switch circuit and the selectable threshold point circuit are connected at a detection node, the switch circuit operable to pull a voltage at the detection node to ground when the value of the power supply is above the selected value for the threshold point.<sup>cc</sup>

31. The system of Claim 21 wherein the switch circuit and the selectable threshold point circuit are connected at a detection node, the selectable threshold point circuit operable to pull a voltage at the detection node up to the value of the power supply when the power supply is below the selected value for the threshold point.<sup>cc</sup>

32. The system of Claim 21 further comprising a current source generator block<sup>110</sup> coupled to the voltage-following circuit and the switch circuit.

33. The system of Claim 32 wherein the current source generator block comprises:  
a reference transistor; and

a current mirror transistor coupled to the reference transistor and the switch circuit.

34. The system of Claim 32 wherein the current source generator block comprises:

a reference transistor; and

a plurality of current mirror transistors coupled to the reference transistor and the switch circuit.

35. The system of Claim 21 further comprising a voltage level detection circuit

coupled to the selectable threshold point circuit and the switch circuit, the voltage level

detection circuit operable to output a signal indicating whether the value of the power supply is above or below the selected value for the threshold point.

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